



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 20th of April, 2020

Accepted on: 9th of June, 2020

Published on: 16th of June, 2020

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Christopher Gan, 2020

Wittawat Hemtanon, Ph.D. student,
Faculty of Agribusiness and Commerce,
Lincoln University, Ellesmere
Junction Road, Lincoln, New Zealand.
(Corresponding author)

Christopher Gan, Ph.D., Professor,
Faculty of Agribusiness and Commerce,
Lincoln University, Ellesmere Junction
Road, Lincoln, New Zealand.



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Conflict of interest statement:

Author(s) reported no conflict of interest

Wittawat Hemtanon (New Zealand), Christopher Gan (New Zealand)

AN EMPIRICAL ANALYSIS OF THAI VILLAGE FUNDS AND SAVING GROUPS' FINANCIAL PERFORMANCE

Abstract

Microfinance institutions (MFIs) play an important role in enabling poor households to escape poverty. MFIs cannot help borrowers if their own performance is poor. This study evaluates financial performance of Village Funds (VFs) and Saving Groups for Production (SGPs) to determine how well the MFIs are performing financially and how to improve the institutions' future performances. The study evaluates MFIs' performance, including MFI characteristics, outreach, productivity, financial structure and financial performance. Data are collected from the annual reports of MFIs between 2014 and 2016. VF and SGP annual reports were collected by the Government Savings Bank between 2014 and 2016. Data are analyzed using descriptive statistics, such as means, to compare the VFs' and SGPs' performance. The result shows that SGPs are bigger than VFs in terms of the average number of members and borrowers. However, VFs provide more loans than SGPs to poorer clients. In terms of loan management, SGP staff are more efficient than VF staff. SGPs' profits are significantly higher than VFs' profits. In the context of financial structure, SGPs are funded through member deposits, while VFs receive government subsidies. The results indicate that both VFs and SGPs are profitable and financially sustainable.

Keywords

microfinance institutions, financial structure,
microfinance institutional characteristics, outreach,
productivity

JEL Classification

G20, G21, G29

INTRODUCTION

Over the past six decades, Thailand has been developing its economy based on national and social-development plans. These plans enhanced economic growth by supporting the manufacturing industry, with the aim of increasing exports. As a result, the Thai economy has been one of the fastest growing economies in the world; GDP grew 10% per year in the 1990s (Warr, 2000). Between 1988 and 2017, the poverty rate dramatically declined from 65.17% of the population, or 34.2 million people, to 7.9%, or 5.47 million people (ADB, 2019; NESDB, 2015; Warr, 2011). However, income inequality remains a significant problem in Thailand. The Gini index shows that income inequality in Thailand is the highest in Southeast Asia (Bird, Hattel, Sasaki, & Attapich, 2011). The index changes between 1988 and 2017 from 0.487 to 0.365, despite a declining poverty rate over the period (WBG, 2019).

The Thailand Twelfth National Economic and Social Development Plan (12th NESDP), established in 2017 over a five-year period, shows the overall development vision linked to the vision of the 20-year national strategy (2017–2036). The plan shows that the development of microfinance institutions (MFIs) is considered important to achieve inequality alleviation. MFIs play a vital role in helping the poor escape poverty.

Although microfinance programs play an important role in improving well-being of borrowers, MFIs cannot help borrowers if their own performance is poor.

This paper evaluates VFs' and SGPs' financial performance to determine how well MFIs are doing financially and how to improve the institutions' future performances. The rest of the paper is organized as follows. Section 1 describes microfinance institutions in Thailand. Section 2 provides the literature review. Section 3 describes methodology and data. Section 4 provides results. Section 5 provides the discussion of the empirical findings. The last section concludes the study.

1. MICROFINANCE INSTITUTIONS (MFIs) IN THAILAND

MFIs in Thailand can be divided into three main groups (Bird, Hattel, Sasaki, & Attapich, 2011). The first group includes formal MFIs, such as banks and nonbanking institutions that are regulated by prudential regulations. This group consists of commercial banks and special financial institutions (SFIs). The second group consists of semi-formal MFIs, which are not regulated by prudential regulations. However, these institutions still have legal status (Tambunlertchai, 2015). The second group includes cooperatives, Saving Groups for Production (SGPs) and Village Funds (VFs). The last group includes informal MFIs, which are not established or regulated by government legislation. This group is smaller than the formal and semi-formal groups. They are often saving groups, which operate at the village level (Bird, Hattel, Sasaki, & Attapich, 2011; Tambunlertchai, 2015).

Studies have shown that, in Thailand, most low-income and poor people can access financial services from community-based MFIs, such as VFs, cooperatives, and SGPs (ADB, 2013; Suwaruchiporn, 2016). ADB (2013) reveals that over 50% of VF borrowers and 40% of SGP borrowers have average incomes of less than THB 6,000 per month. Therefore, these Thai MFIs can ultimately help them escape poverty. This study focuses on VFs and SGPs.

1.1. Village Funds (VFs)

The VF program, the largest government microfinance program in Thailand, was established by the government in 2001. The Thai government provided THB 1 million (about USD 22,500 at USD 1 =

THB 44.5 in 2001) per village, to more than 77,000 villages and urban communities across the country (Fongthong & Suriya, 2014). After the general election in 2011, the government increased funding to THB 2 million (about USD 65,800 at USD 1 = THB 30.4 in 2011) per village. VF plays an important role in the credit market in Thailand, especially for the poor who live in rural areas and who are often unable to access formal financial services (Fongthong & Suriya, 2014).

1.2. Saving Groups for Production (SGPs)

SGPs were established in 1974 by community leaders to encourage members to save. SGPs involve gathering people with different status in the village to help each other to solve their investment problems (Luxchaigul, 2014). The local people regularly save money in their cash pool. Savings are the best way for fund accumulation (Luxchaigul, 2014). SGPs' economic activities begin with savings for welfare provision and loans. Borrowers obtain loans to invest in their businesses (Luxchaigul, 2014). SGPs also provide loans to improve livelihoods of their members and to deal with emergencies. SGPs play an important role in providing microfinance services to the poor (Meagher, 2013).

2. LITERATURE REVIEW

MFI performance assessment involves evaluating progress and determining if an MFI has achieved its goals. The most important goal of MFIs is to improve the living standard of the poor and to eradicate poverty.

Evaluating MFI performance can be accomplished based on three criteria, which are referred to as the triangle of microfinance (Zeller & Meyer,

2002). These criteria are outreach, financial sustainability and welfare impact. Outreach refers to the total number of poor, including the total number of women, who are served by microfinance programs (Mokhtar, 2011). This criterion means that microfinance programs can reach the poorest with a variety of financial services. Financial sustainability is measured using 11 financial performance indicators, such as portfolio at risk, the provision expense ratio, the risk coverage ratio, the write-off ratio, the operational expense ratio, cost per client, personnel productivity, credit officer productivity, the funding expense ratio, the cost of funds ratio, and loan loss reserves (Mokhtar, 2011). The welfare impact is measured by the benefits borrowers gain from the program. This measurement is essential in determining the success of a microfinance program. Welfare information is used by donors and governments to justify their investment in the program.

Many researchers measure MFI performance using only a welfare perspective impact (e.g., Coleman, 1999; Pitt & Khandker, 1998; Setboonsarng & Parpiev, 2008; Swain & Floro, 2012). Some researchers focus solely on outreach (e.g., Navajas, Schreiner, Meyer, Gonzalez-Vega, & Rodriguezmeza, 2000). Others examine both outreach and financial performance (e.g., Bhuiyan, Siwar, Ismail, & Talib, 2011; Cull, Demirguc-Kunt, & Morduch, 2007; Kereta, 2007; Quayes, 2015). This study focuses on Thailand VFs' and SGPs' outreach and financial performance.

Agarwal and Sinha (2010) analyze MFI financial performance in India using six parameters of financial performance, such as financial structure, revenue, expenses, efficiency, productivity, and risk. These parameters are comprehensive and are globally accepted indicators of MFI financial performance (Agarwal & Sinha, 2010). Agarwal and Sinha also use financial performance to capture the holistic picture of MFI performance. Financial performance is defined as whether an MFI is profitable enough to maintain and expand its services without subsidies (Rosenberg, 2009). This means financial performance contributes to financial sustainability of MFIs (Eur-U-Sa, 2011). Financial performance covers three ratios: return on assets (ROA), return on equity (ROE) and operational self-sufficiency (OSS). MFIs are profitable and sus-

tainable if they exhibit positive ROA and ROE and have an OSS value over 100% (Bassem, 2012). OSS ratio shows whether operating income is enough to cover operating costs, including salaries, loan losses and other administrative costs (Arthur, Abanis, Eliab, & Sumil, 2013). An OSS ratio over 100% means that MFIs can run their business without funding or subsidies from external sources (Schäfer & Fukasawa, 2011).

The current study focuses on outreach and financial performance and investigates the performance of VFs and SGPs. It compares both VFs' and SGPs' performance in terms of institutional characteristics, outreach, productivity, financial structure and financial performance in a similar manner to Agarwal and Sinha (2010), Bhuiyan, Siwar, Ismail, and Talib (2011) and Rahman and Mazlan (2014).

This study compares institutional characteristics, outreach, productivity, financial structure and financial performance of VFs and SGPs in Thailand using the performance indicators and ratios of financial structure shown in Table 1. There are five financial structure ratios used in this study. They are capital per asset ratio, debt per equity (%), deposit per loans (%), deposits per total assets (%), and gross loan portfolio per assets (%). The capital per asset ratio is used to evaluate MFI solvency. This variable shows an MFI's ability to meet its obligations and absorb unexpected losses (Yenesew, 2014). Yenesew (2014) states that the determination of an acceptable ratio level is generally based on an MFI assessment: expected losses, financial strength, and ability to absorb losses. This means that the ratio measures the amount of capital required to cover unexpected losses. This study uses capital per asset ratio as a proxy for MFIs' capital. Thus, if an MFI has higher capital per asset ratio, it is safer than lower ratio institutions. Daher and Le Saout (2015) analyzed a global dataset from 2005 to 2011 and identified those MFIs that had high capital to assets ratio and financially outperformed. Using a panel data set of 210 African microfinance institutions, Muriu (2011) finds that that capital adequacy has significant positive association with MFI profitability.

The debt per equity ratio is measured by dividing total liability by total equity. Total liability includes all the debt that an MFI owes, such as de-

posits, borrowings, and other liability accounts. This ratio is the simplest indication of capital adequacy, since the ratio reflects an MFI's overall leverage (Yenesew, 2014). Muriu (2011) evaluates MFIs' profitability in 32 countries. The author asserts that if MFIs employ more debt in their capital structure, these institutions can increase their profits. Muriu also shows that a higher debt per equity ratio can improve ROE. Dissanayake (2012) investigates factors affecting MFIs' profitability in Sri Lanka. The author finds that the debt to equity ratio is negative but is statistically insignificant in relation to MFIs' performance.

The deposit per loan ratio indicates self-sufficiency and an institution's ability to mobilize savings (Eur-U-Sa, 2011). Eur-U-Sa (2011) evaluates the performance of the Bank of Agriculture and Agricultural Cooperatives (BAAC) in Thailand and finds that the deposit per loan ratio of the BAAC gradually increased between 1967 and 2009. This means that the bank is moving towards becoming a self-financing institution. Bhuiyan, Siwar, Ismail, and Talib (2011) estimate financial sustainability and outreach of MFIs in Malaysia and Bangladesh. They find that the deposit per loan ratio of MFIs in Malaysia is higher than the ratio in Bangladesh. This means that Malaysian MFIs have greater levels of self-financing than Bangladeshi MFIs.

The deposit per total asset ratio is measured by dividing total deposits by total assets. This ratio is only relevant for mobilizing MFIs' deposits. If an MFI has an efficient deposit program, this ratio will be high. This means that an institution has low funding costs (Muriu, 2011). Muriu explains that external funding is more costly than deposits, thus MFIs may effectively use local depositors. However, Rahman and Mazlan (2014) find that Bangladeshi MFIs do not use deposits as their main source of funds. Their main source of funds comes from debt-financing, which explains why the debt to equity ratio of these MFIs is high. Agarwal and Sinha's (2010) results show that the debt to equity ratio of these Indian MFIs is high. This means that their main funding is debt.

The gross loan portfolio per asset ratio is measured by dividing the gross loan portfolio by total assets. This ratio shows the financial structure. The ratio

indicates the proportion of MFIs' core earning assets. Wassie, Kusakari, and Sumimoto (2019), who evaluated Ethiopian MFIs performance, state that the gross loan portfolio per asset ratio indicates the management's ability to allocate resources to the primary and most profitable activity of MFIs – making microloans. Wassie, Kusakari, and Sumimoto (2019) find that, on average, the MFIs considered in their study devote nearly 70% of their assets to their primary purpose of making loans. Bhuiyan, Siwar, Ismail, and Talib (2011) use this variable to compare the financial structure of Malaysian and Bangladeshi MFIs. Their results reveal that Malaysia MFIs' ratio is higher than Bangladesh MFIs. Anduanbessa (2009) finds that the gross loan portfolio per asset ratio affects MFI sustainability.

MFI financial performance consists of ROA, ROE, and operational self-sufficiency. ROA is measured by dividing net operating income by total assets. This variable reflects an MFI's ability to deploy its asset profitably. Nyamsogoro (2010) shows that Tanzanian MFIs had a negative return on assets between 2001 and 2002, as these institutions were starting businesses in a new environment. Therefore, ROA experiences both positive and negative values. Tanin, Mobin, Ng, Dewandaru, Salim, Nkoba, and Razak (2019) used this ratio to evaluate the financial performance of 62 MFIs across 34 countries. They find that the mean ROA of MFIs is 2.9%, which implies that these MFIs are financially sustainable. Agarwal and Sinha (2010) used this ratio to evaluate the financial performance of MFIs in India. The authors find that MFIs in India are financially sustainable.

ROE is measured by dividing net operating income by total equity. ROE reflects the efficiency of operations and proper portfolio management in relation to equity (Nyamsogoro, 2010). This ratio is a crucial indicator for private investors when deciding whether to invest in MFIs (Ledgerwood, 1998).

Duwal (2012) used ROE to measure the operating performance of MFIs in Nepal. The author states that ROE can be used to measure returns on owners' investments. The results show that Nepal MFIs perform better than the global benchmark. Using a sample of 722 MFIs from the period of 2005–2010, Cozarenco, Hudon, and Szafarz (2016) used

Table 1. Institutional characteristics, outreach, productivity, and financial performance measurement indicators and ratios

Source: Bhuiyan, Siwar, Ismail, and Talib (2011), Rahman, and Mazlan (2014).

Indicator	Ratio or calculation
Institutional characteristics	
Age (years)	Age of MFI
Personnel (persons)	Personnel number
Profit	MFI's profit
Total assets	Total assets of MFI
Total liability	Total liability of MFI
Total equity	Total equity of MFI
Outreach	
The number of members (persons)	Number of members
The number of borrowers (persons)	Number of borrowers
Average loan balance per borrower (Baht per borrower)	$\frac{\text{Gross Loan Portfolio}}{\text{Number of Active Borrowers}}$
Productivity	
Borrowers per staff member	$\frac{\text{Number of Active Borrowers}}{\text{Number of Personnel}}$
Loans per staff member	$\frac{\text{Gross Loan Portfolio}}{\text{Number of Personnel}}$
Financial structure	
Capital per asset ratio	$\frac{\text{Equity}}{\text{Assets}}$
Debt per equity (%)	$\frac{\text{Liabilities}}{\text{Equity}}$
Deposit per loan (%)	$\frac{\text{Deposits}}{\text{Gross Loan Portfolio}}$
Deposits per total assets (%)	$\frac{\text{Deposits}}{\text{Assets}}$
Gross loan portfolio per assets (%)	$\frac{\text{Gross Loan Portfolio}}{\text{Assets}}$
Financial performance	
ROA	$\frac{(\text{Net Operating Income} - \text{Taxes})}{\text{Average Total Assets}}$
ROE	$\frac{(\text{Net Operating Income} - \text{Taxes})}{\text{Average Total Equity}}$
OSS	$\frac{\text{Financial Revenue}}{(\text{Financial Expense} + \text{Net Impairment} + \text{Operating Expense})}$

ROE to compare financial performance of deposit- and non-deposit-mobilizing MFIs. They find that both MFIs are not significantly different in terms of financial performance.

OSS is measured by dividing operating income by operating expenditure. Meyer (2002) states that OSS means that the operating income is sufficient to cover operating costs (such as salaries

and wages, supplies, loan losses, and other administrative costs). Some studies use OSS to evaluate MFI sustainability. Bogan (2012) evaluates how changes in capital structure can improve financial sustainability based on the operational self-sustainability ratio. The author uses panel data from MFIs in Latin America, Asia, and Eastern Europe between 2003 and 2006. Bogan's (2012) results show that assets and capital structure affect MFIs' performance. Asset size is positive and significantly influenced by sustainability. The grant per asset ratio is significant and negatively influenced by sustainability. The relationship between grant per asset and sustainability means that MFIs should rely less on grants, soft loans, and other types of donor funds. Sekabira (2013) investigates the sustainability of 14 MFIs in Uganda, based on capital structure. The study uses operational self-sustainability and financial self-sustainability to measure sustainability. Sekabira (2013) finds that debt and grants are negatively correlated with operational and financial self-sustainability and that capital structure is essential for MFIs' sustainability. The author states that when MFIs increase their debts, they struggle to make repayments. Moreover, when MFIs receive more grants, operations become less competitive because these funds are given to borrowers at lower than market interest rates. This practice reduces interest revenues and funds for future operations.

3. METHODOLOGY AND DATA

This study compares both VFs' and SGPs' performance, including MFI characteristics, outreach, productivity, financial structure and financial performance. It was not possible to use the latest data because the government and the Government Savings Bank (GSB) do not currently have a database that contains the most recent data. The data were collected from annual reports of MFIs between 2014 and 2016. VFs' and SGPs' annual reports were collected by the GSB between 2014 and 2016. GSB collected these data through the MFIs competition in Thailand. The MFIs competition is an annual contest run by the GSB. There are more than 100 MFIs in Thailand that participate in this contest. This study uses data from 90 VFs and 70

SGPs in Thailand. The annual reports include the total number of members and borrowers, the total number of staff members, the total cash, loans outstanding, assets, liabilities, equity, revenue, expenses, and net profit.

This study uses descriptive statistics to assess VFs' and SGPs' performance, such as the mean tests for comparing the VFs' and SGPs' performance. Agarwal and Sinha (2010) state that it is good to use the difference of means test, if data is too small to use rigorous multivariate analysis. Several studies have used descriptive statistics to evaluate MFIs' performance. Piot-Lepetit and Nzongang (2019), who evaluated village banks' performance in Cameroon, use descriptive statistics to explain their variables in a Data Envelopment Analysis (DEA). The authors find that village banks in Cameroon are efficient. Roy (2011) examines MFIs' profitability in Assam (a state in north-eastern India), based on simple correlation and descriptive statistics, and finds that MFIs of Assam enjoy higher profitability. Kereta (2007) explores the outreach and financial performance of Ethiopian microfinance institutions based on a simple descriptive analysis and percentage growth rates. The author finds that in terms of breadth of outreach, MFIs served an increasing number of clients in each year from 2003–2007. The industry's growth rate in terms of number of clients is 22.9%. Agarwal and Sinha (2010), Bhuiyan, Siwar, Ismail, and Talib (2011), and Rahman and Mazlan (2014) use descriptive analysis to compare the financial performance of MFIs. They conclude that MFIs are financially sustainable.

4. RESULTS

4.1. VF and SGP characteristics, outreach and productivity

Table 2 shows that the average age of the VF and SGP respondents are 13.09 and 10.61 years, respectively. The means of the groups are significantly different at the 1% level. SGPs have a higher average number of members and borrowers than VFs. The average number of SGP members and borrowers are 445.54 and 106.72, respectively; VFs have an average of 347.38 members and 97.04 borrowers. The number of members for the types of MFIs

Table 2. Institutional characteristics, outreach and productivity of Thai VFs and SGPs (mean values from 2014 to 2016)

Source: Author's calculations.

Element	Benchmark		T-test
	VFs	SGPs	P-value
Institutional characteristic			
Age (years)	13.09	10.61	0.000***
Personnel (persons)	10.68	11.26	0.0334**
Profit (Baht)	112,623.10	230,867.60	0.0000***
Total assets (Baht)	2,576,263.00	5,513,542.00	0.0000***
Total liability (Baht)	78,813.04	2,861,209.00	0.0000***
Total equity (Baht)	2,499,516.00	2,693,207.00	0.4833
Outreach			
The number of members (persons)	347.38	445.54	0.0117**
The number of borrowers (persons)	97.04	106.72	0.2950
Average loan balance per borrower (Baht per borrower)	27,008.03	32,377.61	0.0262**
Productivity			
Borrowers per staff member	9.08	8.77	0.7308
Loan per staff member	194390.70	288952.60	0.0075***

Note: *, **, *** indicate significance at 10%, 5%, and 1% levels, respectively.

are significantly different at the 5% level. The average SGP loan amount per borrower is significantly higher at the 5% level than for VFs. The average loan for SGPs and VFs is 32,377.61 and 27,008.03 baht per borrower, respectively (see Table 2).

The average number of staff members per VF and SGP is 10.68 and 11.26 persons, respectively, and significantly different at the 5% level. VFs and SGPs have similar numbers of borrowers per staff member (9.08 and 8.77) (see Table 2). However, for SGPs, loans per staff member are significantly higher at the 1% level than for VFs. Total loan amounts per staff member for SGPs and VFs are 288,952.6 and 194,390.7 baht, respectively. In addition, SGP profits of 118,253.6 baht per year are significantly higher at the 1% level than VF profits.

SGPs' total assets are significantly higher at the 1% level, almost double those of VFs (5,513,542 baht and 2,576,263 baht, respectively) (see Table 2). SGPs have significantly higher (at the 1% level) liabilities than VFs, approximately 36 times (2,861,209 baht and 78,813.04 baht, respectively). SGP and VF total equities are similar. The total equities are 2,693,207 and 2,499,516 baht, respectively (see Table 2).

4.2. VF and SGP financial structures

This section compares the VFs and SGPs financial structures using the capital per asset, debt per equity, deposit per loan, and gross loan portfolio per asset ratios. The VF capital per asset ratio is significantly higher at the 1% level than the SGP. Both the VFs and SGPs capital per asset ratios are significantly higher than the Global and FSS benchmarks (see Table 3).

Table 3. Comparison of Thai MFIs' financial structures (mean values from 2014 to 2016)

Source: Author's calculations.

Indicator	Financial structure		T-test	Benchmark	
	VFs	SGPs	P-value	Global	FSS
Capital per asset ratio	0.98	0.68	0.0000***	0.2398	0.231
Debt per equity	0.08	3.23	0.0000***	0.0286	0.033
Deposits per loan	0.01	0.40	0.0000***	0.1107	0.118
Deposits per total assets	0.00	0.19	0.0000***	0.0597	0.089
Gross loan portfolio per assets	0.77	0.64	0.0193**	0.7685	0.784

Note: *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively.

The SGP average debt per equity ratio is above the VF average ratio and significantly different at the 1% level. Both the VF and SGP average ratios are higher than the Global and FSS benchmarks, particularly the SGP ratio (see Table 3). The finding shows that SGP profits are significantly higher at the 1% level than VF profits, 118,253.60 baht per year.

There is a significant difference in the deposit to loan ratio of VFs and SGPs at the 1% level. The VF deposit per loan ratio is lower than the Global and FSS benchmarks, but the SGP ratio is much higher. The VF and SGP gross loan portfolio per asset ratios differ significantly at the 5% level but they are similar to the Global and FSS benchmarks.

4.3. VF and SPG financial performance

This section evaluates the financial performance of VFs and SGPs based on ROA, ROE, and OSS. Table 4 compares the financial performance of VFs and SGPs between 2014 and 2016. The results show that there is a significant difference between the ROAs for VFs and SGPs at the 1% level. Both VFs and SGPs' ROA ratios are higher than the Global and FSS benchmarks. In terms of ROE, the SGP ratio is significantly higher at the 1% level than the VF ratio. The SGPs' average ROE is above the Global and FSS benchmarks, while the VFs' average ROE is lower than both benchmarks. Table 4 shows that the OSS of VFs is significantly above SGPs at the 1% level. The OSS of both VFs and SGPs is higher than the Global and FSS benchmarks.

5. DISCUSSION OF EMPIRICAL FINDINGS

This study evaluates the performance of VFs and SGPs, including characteristics (such as age, assets, total liabilities, total equity), outreach (average

loan balance per borrower), productivity (numbers of borrowers per staff member), financial structure and financial performance.

Age refers to the total years that an MFI has been in operation (Woldeyes, 2012). According to Kar (2012), older MFIs may benefit from organizational learning. Organizational learning is learning within a specific organization that involves the interaction of multiple levels of analysis (individual, group, organizational and inter-organizational). The process includes creating, retaining, and transferring knowledge within an organization. An organization improves over time as it gains experience. From this experience, an organization can create knowledge (Argote & Miron-Spektor, 2011; Popova-Nowak & Cseh, 2015). Learning reflects productivity and efficiency and how these can be improved (Kar, 2012). Cull, Demircug-Kunt, and Morduch (2007) evaluate the financial performance and outreach of 124 MFIs in 49 developing countries. The authors find a positive relationship between MFI age and sustainability. Robinson (2001) explains that experienced MFIs, or those over six years old, are 102% financially self-sufficient. Those between three and six years old are 86% financially self-sufficient, whereas those that have been in operation for less than three years are only 69% financially self-sufficient. This implies that an MFI's age affects its financial sustainability. The result suggests that VFs and SGPs benefit from organizational learning. Lewis, Tambunlertchai, Suesuwan, Adair, and Hickson (2013) state that Thailand MFIs can use networking to share knowledge and experience to improve their performance. The authors suggest that the Community Development Department (CDD) encourages SGPs to network at the district, provincial and regional levels to share their knowledge to improve their performance.

The average loan balance per borrower is measured using depth of outreach (Ledgerwood, 1998).

Table 4. A comparison of Thai MFIs' financial performance (mean values from 2014 to 2016)

Source: Author's calculations.

Indicator	Financial performance		T-test	Benchmark	
	VFs	SGPs	P-value	Global	FSS
Return on assets	0.05	0.07	0.0000***	0.01	0.02
Return on equity	0.06	0.31	0.0000***	0.07	0.11
Operational self-sufficiency	13.59	2.94	0.0011***	1.09	1.17

Note: *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively.

Smaller loans reflect a poorer client base (Cull, Demirguc-Kunt, & Morduch, 2007; Mersland & Storm, 2009). Table 2 shows that VFs provide more loans to poorer clients than SGPs in terms of depth of outreach.

A higher number of borrowers per staff member reflects an MFI's ability to use its staff members efficiently. The finding indicates that the efficiency of staff member for both MFIs does not differ in terms of monitoring borrowers. The loans per staff member ratio is used to measure staff productivity in terms of loan management. Table 2 suggests that SGP staff members are more efficient in loan management than VF staff members.

The MFI assets reflect the size of the institution. Larger MFIs can benefit from economies of scale by reducing operating expenses and therefore achieving greater financial performance (Meyer, 2019). The results suggest that SGPs gain more benefit from economies of scale than VFs. SGPs' total assets are significantly higher at the 1% level, almost double those of VFs. In terms of profit, SGP profits are significantly higher at the 1% level than VF profits. In addition, larger MFIs can reach more people than smaller MFIs (Mersland & Storm, 2009). The result indicates that SGPs can reach greater number of borrowers than VFs.

Total liabilities include all deposits, debts, accounts payable, and other liability accounts (CGAP, 2003). When MFIs take on more debt instruments, efficient liability management and planning are key to growing the institutions (Bayai & Ikhida, 2016). SGPs were established by community leaders or citizen groups to promote savings among members, to provide credit to improve members' lives, and to make emergency funds available (Meagher, 2013). In short, SGPs are funded through member deposits. The results suggest that if SGPs manage and plan their liabilities efficiently, then they can grow more than VFs. However, long-term debts are relatively more expensive and, therefore, employing a high proportion of such debts can lead to lower profitability (Kar, 2012). SGPs should be concerned about the cost of such liability.

Total equity is the sum of all equity accounts net of any equity distributions, e.g., dividends, stock repurchases, or other cash payments made to share-

holders (CGAP, 2003). Equity has an impact on MFI performance because equity is cheap, leading to higher FSS (Bayai & Ikhida, 2016; Kar, 2012). Nyamsogoro (2010) states that equity is a relatively cheap source of funding; equity can improve MFI sustainability. VFs derive their equities from the government. The programs do not make profit from poor people. This makes equity a relatively cheap source of finance and, thus, improves their financial sustainability. On the other hand, SGPs derive their equities from the members in the rural areas. The local people regularly save money in a cash pool. Savings for SGPs are the best way of fund accumulation (Luxchaigul, 2014).

In terms of financial structures (the capital per asset, debt per equity, deposit per loan, and gross loan portfolio per asset ratios), the capital per asset ratio is used to evaluate MFIs' solvency. This ratio also shows an MFI's ability to meet its obligations and absorb unexpected losses (Yenesew, 2014). Yenesew (2014) states that the determination of an acceptable ratio level is generally based on an MFI's assessment measures, which include expected losses, financial strength, and the ability to absorb losses. This ratio measures the amount of capital required to cover unexpected losses. The current study uses the capital per asset ratio as a proxy for MFI capital. MFIs that have high capital to assets ratio are financially outperformed (Daher & Le Saout, 2015). This means that if an MFI has a higher capital per asset ratio, it is safer in terms of ability to meet its obligations and absorb unexpected losses than lower ratio institutions. Therefore, both VFs and SGPs are relatively safe in terms of financial strength compared with the Global and FSS benchmarks.

The results of the average debt per equity ratio indicate that SGPs are saving-based organizations (the SGP ratio is much higher than the VF ratio). This implies that SGPs have greater creditor risks. However, Muriu (2011) concludes that if MFIs employ more debt in their capital structure, these institutions can increase their profit.

The deposit to loan is one of the indicators that shows financial structure of an MFI. Eur-U-Sa (2011) evaluates the performance of the BAAC in Thailand. The author finds that the BAAC deposit per loan ratio gradually increased between

1967 and 2009. This suggests that the BAAC is moving towards becoming a self-financing institution. Muriu (2011) explains that external funding is more costly than deposits, thus MFIs may effectively use local depositors. The result of the current study reveals that deposits are the main source of funding for SGPs.

The gross loan portfolio per asset ratio is another key indicator of financial structure of an MFI. This ratio indicates an MFI's proportion of core earning assets. Wassie, Kusakari, and Sumimoto (2019) find that, on average, MFIs in Ethiopia devote nearly 70% of their assets to their primary purpose of making loans. Rahman and Mazlan (2014) and Bhuiyan, Siwar, Ismail, and Talib (2011) reveal that core earning assets of MFIs in Malaysia and Bangladesh are loans. Mahapatra and Dutta (2016) state that the gross loan portfolio acts as an indicator of an MFI's main source of income. In short, the bigger the loan, the more interest income they will make. The results indicate that both VFs and SGPs' core earning assets are loans.

In terms of financial performance (ROA, ROE, and OSS), both VFs and SGPs' ROA ratios are higher than the Global and FSS benchmarks. This result indicates that both VFs and SGPs can deploy their assets profitably. As Ngo (2012) notes, ROA is used to measure profitability in commercial institutions. Shkodra (2019) used ROA to evaluate financial performance of MFIs in Kosovo and found that the ROA of MFIs in Kosovo was low. It means that MFIs in Kosovo are not making enough income from their assets. This is not a good sign for the growth of MFIs in Kosovo. Agarwal and Sinha (2010) used ROA to evaluate the financial performance of India MFIs. The authors find that MFIs in India are also finan-

cially sustainable. Wassie, Kusakari, and Sumimoto (2019), who evaluate Ethiopian MFIs' performance using ROA, find that they perform well.

The lower VFs' average ROE is not surprising given that its equity comes from the government; they do not prioritize profits because their core objective is to assist the poor. VFs play an important role in the credit market of Thailand, especially for poor individuals who live in rural areas and cannot access formal financial services (Fongthong & Suriya, 2014). The ROE ratio is important only for profit-earning institutions (Duwal, 2012). Ngo (2012) notes that the ROE ratio tends to encourage investors to reinvest in MFIs. Likewise, Ledgerwood (1998) states that this ratio is a vital indicator for private investors when deciding whether to invest in MFIs. This ratio is the most common indicator used to assess financial sustainability of MFIs. Table 4 shows that the average ROEs for VFs and SGPs are positive, indicating that both are financially sustainable.

OSS measures operating income and operating costs, such as salaries and wages, supplies, loan losses, and other administrative costs (Meyer, 2002). Ngo (2012) states that OSS is one indicator used to assess the financial sustainability of MFIs. Shahzad (2015) uses OSS to measure financial sustainability in South Asian MFIs. According to Shahzad's result, OSS can measure MFIs' financial sustainability in terms of generating enough revenues to cover all financial and operational cost. Shkodra (2019) finds that the value of OSS above one suggests that MFIs in Kosovo generate enough revenues to cover their operating expenses. The results indicate that both types of MFIs are profitable and financially sustainable.

CONCLUSION

This study compared VFs and SGPs in terms of characteristics, outreach, productivity, financial structure, and financial performance. It was found that both VFs and SGPs could benefit from organizational learning because VFs and SGPs have been operating for an average of 13.09 and 10.61 years, respectively. SGPs are bigger than VFs in terms of the average number of members and borrowers. However, VFs provide more loans than SGPs to poorer clients. In terms of loan management, SGP staff are more efficient than VF staff. SGPs' profits are significantly higher than VFs' profits.

In terms of financial structure, SGPs are funded through member deposits, while VFs receive government subsidies. Both the VFs and SGPs capital per asset ratios are above the Global and FSS bench-

marks. The result shows that both VFs and SGPs are safe in terms of financial strength. This implies that both VFs and SGPs are able to meet their obligations and absorb unexpected losses. The gross loan portfolio per asset ratio indicates that both VFs and SGPs have lending as their core earning asset. The results indicate that both VFs and SGPs are profitable and financially sustainable.

To achieve sustainability, both VFs and SGPs should ensure their social and financial goals are adequately balanced. It proposed that both VFs and SGPs use a mixed approach. It is recommended that both VFs and SGPs follow profit maximization principles and the government and donors support this approach to help them to be sustainable. They should create a robust financial infrastructure to assist MFIs to reduce their costs. This will require the participation of information intermediaries to assist both VFs and SGPs to reduce their costs, such as credit rating, credit bureaus or credit scoring agencies.

This study suggests that both VFs and SGPs should embrace technology to minimize their transaction costs. They can use management information software and other innovative banking technologies, such as internet banking, mobile phone banking, smart card operation, and credit scoring, to minimize transaction costs. These technologies can decrease administrative costs, increase staff productivity and improve the institution financial accounts' reliability (Muriu, 2011). Thus, VFs and SGPs adopt modern technology to minimize transaction costs.

AUTHOR CONTRIBUTIONS

Conceptualization: Wittawat Hemtanon, Christopher Gan.

Data curation: Wittawat Hemtanon.

Formal analysis: Wittawat Hemtanon.

Investigation: Wittawat Hemtanon.

Methodology: Wittawat Hemtanon.

Software: Wittawat Hemtanon.

Supervision: Christopher Gan.

Validation: Wittawat Hemtanon, Christopher Gan.

Writing – original draft: Wittawat Hemtanon.

Writing – reviewing & editing: Wittawat Hemtanon, Christopher Gan.

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